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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,427	09/11/2003	Hideaki Kuwabara	7640756-2649	4101

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NIXON PEABODY, LLP
401 9TH STREET, NW
SUITE 900
WASHINGTON, DC 20004-2128

EXAMINER	
HODGES, MATTHEW P	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,427	KUWABARA, HIDEAKI	
	Examiner	Art Unit	
	Matt P. Hodges	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 22-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,22-24,26-32 and 34-46* is/are rejected.

7)☒ Claim(s) *25 and 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/5/2006 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 7, 9, 26, 28, 31, 34, 36, 39, 41, and 43 are rejected under 35 U.S.C. 102(a) as being anticipated by Daigo. (JP 2002-231445).

Regarding claims 1, 2, 7, 9, 26, 28, 34, 39, 41, and 43, Daigo discloses (see figure 1) an OLED including a substrate, a first electrode (3), an organic compound layer, a second electrode (8), a first bank layer (2) made of an organic resin insulating material and covering a side portion of the first electrode, and a second bank layer (4) covering the top and sides of the of the first bank layer and made of inorganic particulates in an organic binder insulating material. The first and second bank layers include surfaces in contact with the same bottom substrate. Further the

second bank layer is formed between the organic layer and the first bank layer, while the organic layer is formed on the side of the second bank layer. (Paragraphs 0010, 0012, 0019, and 0021).

Regarding claims 4 and 36, Daigo further discloses the use an insoluble hydrophobic material for the first bank (see paragraph 0012) and a hydrophilic material for the second bank (see paragraph 0014).

Regarding claim 31, Daigo further discloses the use of a transparent second electrode where light is emitted from the second electrode. (Paragraph 0045)

Claims 1-12, 26-29, 31, and 34-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamagata et al. (US 2003/0201443).

Regarding claims 1-3, 7-9, 26-29, 34, 35, 39-43, and 43, Yamagata discloses (see figure 1e and 21b) an OLED including a substrate, a first electrode (105), an organic compound layer (110), a second electrode (111), a first bank layer (106) made of an inorganic insulating material and covering a side portion of the first electrode, and a second bank layer (109) covering the top and sides of the of the first bank layer, but not the electrode surface, and made of an organic insulating material. The first and second bank layers include surfaces in contact with the same bottom substrate. Further the second bank layer is formed between the organic layer and the first bank layer, while the organic layer is formed over the first and second banks. (Paragraphs 0051, 0052, 0053, 0055, and 0127).

Regarding claims 4 and 36, Yamagata further discloses the use an insoluble hydrophobic material for the first bank (see paragraph 0092) and a hydrophilic material for the second bank (see paragraph 0053).

Regarding claims 5, 6, 11, 12, 37, 38, 45, and 46, Yamagata further discloses the polishing of the first electrode after placement of the first bank layer. This leads to more irregularities between the first electrode and the first bank layer than between the first electrode and either the organic layer or the second bank layer. (See paragraph 0052).

Regarding claims 10 and 44, Yamagata alternatively discloses the use of the same material for both the first bank and second bank. (See paragraphs 0053 and 0092).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5-7, 11-15, 22-24, 26, 30, 32, 37-39, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US 2002/0158835 A1) in view of Yamagata et al. (US 2003/0201443).

Regarding claims 1, 7, 26, and 39, Kobayashi discloses (see figure 7) an OLED including a substrate (101), a first electrode (117), an organic compound layer (121), a second electrode (122), and a bank layer (120) made of an organic insulating material and covering a side portion of the first electrode. (Paragraph 0088). Kobayashi does not appear to specify the use of a second bank layer on the side surfaces of the first bank layer, however Yamagata discloses the use of a second film layer formed over the first bank layer to advantageously enhance moisture resistance and improve device reliability. Thus, it would have been obvious at the time the

invention was made to a person having ordinary skills in the art to incorporate the use of a second bank layer formed over the first bank layer as taught by Yamagata into the device as described by Kobayashi in order to advantageously enhance moisture resistance and improve device reliability.

Regarding claims 22-24, 30, and 32, Kobayashi further discloses the use of an auxiliary electrode (118) on the insulating bank layer. The auxiliary electrode is in contact with the second electrode and lowers the resistance of the transparent second electrode. Further light is transmitted through the second electrode.

Regarding claim 13, Kobayashi further disclose the use of a black resist material for the composition of the bank. Kobayashi does not appear to specify the composition of the resist material, however it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Specifically the use of metal oxides to darken polymer layers is well understood in the art of display devices. The use of metal oxides to reduce transparency is advantageously inexpensive and easy to manufacture. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have used metal oxides for the darkening pigment of the organic bank disclosed by Kobayashi, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claims 5, 6, 11, 12, 14, 15, 37, 38, 45, and 46, Kobayashi in view of Yamagata discloses the device as claimed but does not appear to specify that the irregularities between the first electrode and the organic layer or second bank are smaller than those between the first

electrode and the bank. However Yamagata discloses the use of polishing the surface of the first electrode before applying the second bank in order to advantageously enhances uniform layering of subsequent layers and enhances device lifetime. (See rejection of claim 5 above) Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have used the technique of polishing the surface of the first electrode before applying the second bank as taught by Yamagata into the device as disclosed by Kobayashi in view of Yamagata in order to advantageously improve device lifetime.

Allowable Subject Matter

Claims 25 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 25, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 25, and specifically comprising the limitation of a light emitting apparatus including a first insulating bank, a second insulating bank formed as a side wall of the first bank and a metal layer laminated on a first insulating bank where the metal layer is connected to bottom wiring via a contact hole.

Regarding claim 33, claim 33 is allowable for the same reasons as stated in claim 25.

Response to Arguments

Regarding applicant's assertion that the Daigo reference fails to disclose the use of a second bank composed of an insulating material, the examiner respectfully disagrees. Daigo

identifies the second bank material being composed of an organic insulating binder. Further, the layer is positioned in contact with and between the first and second electrodes. If the layer was not insulating, the device would short circuit and be inoperable.

Regarding applicant's assertion that the Yamagata reference fails to disclose the use of a second bank layer where the second bank is at least partially absent between the organic layer and the electrode, the examiner respectfully disagrees. Though not evident in figure 1e, the applicant is directed towards an alternative embodiment shown in figure 21b, where the second bank is covering all areas except between the organic layer and the pixel electrode. Here, the removal of the second bank material is advantageously allowing for a more direct contact between the organic layer and the pixel electrode.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mph

NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800